

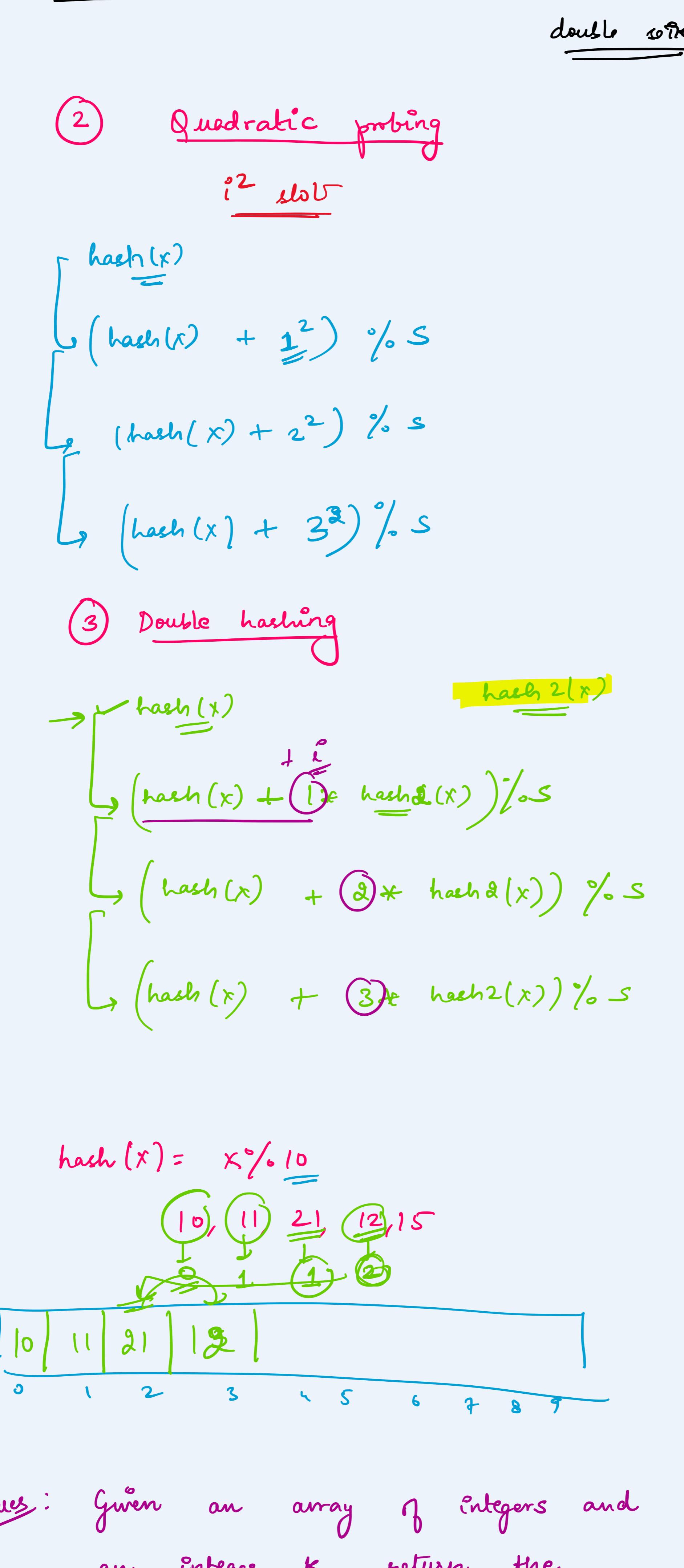
| <u>HashMap</u> | |
|----------------|-----|
| 5 | → 0 |
| 7 | → 1 |
| 2 | → 1 |

key | values
(element) (freq)

ans → [7, 5, 5, 5]

Collision Resolution Technique \rightarrow Open addressing

① linear probing



② Quadratic probing

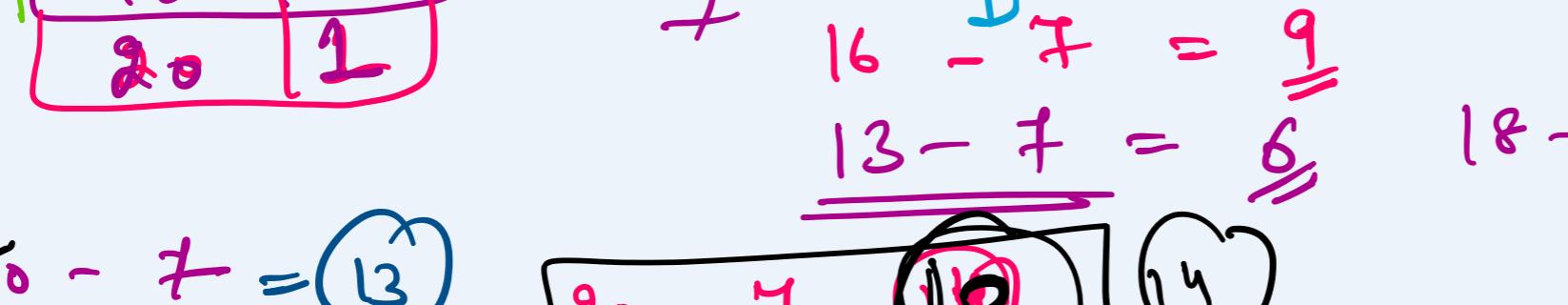
 i^2 slot

$$\begin{cases} hash(x) \\ (hash(x) + 1^2) \% s \\ (hash(x) + 2^2) \% s \\ (hash(x) + 3^2) \% s \end{cases}$$

③ Double hashing

$$\begin{cases} hash(x) \\ hash_2(x) \\ (hash(x) + 1 * hash_2(x)) \% s \\ (hash(x) + 2 * hash_2(x)) \% s \\ (hash(x) + 3 * hash_2(x)) \% s \end{cases}$$

$$\text{hash}(x) = x \% 10$$



Ques: Given an array of integers and an integer k, return the total no. of continuous subarrays whose sum equals to k.

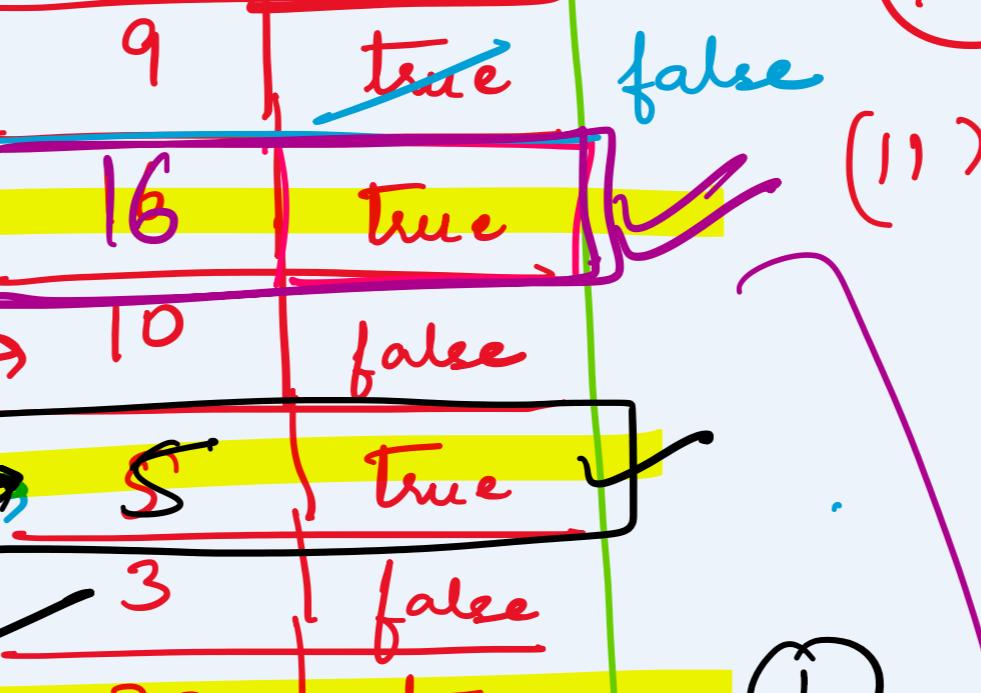
Input: nums = [1, 1, 1] k = 2

Output → 2 [1, 1], [1, 1]

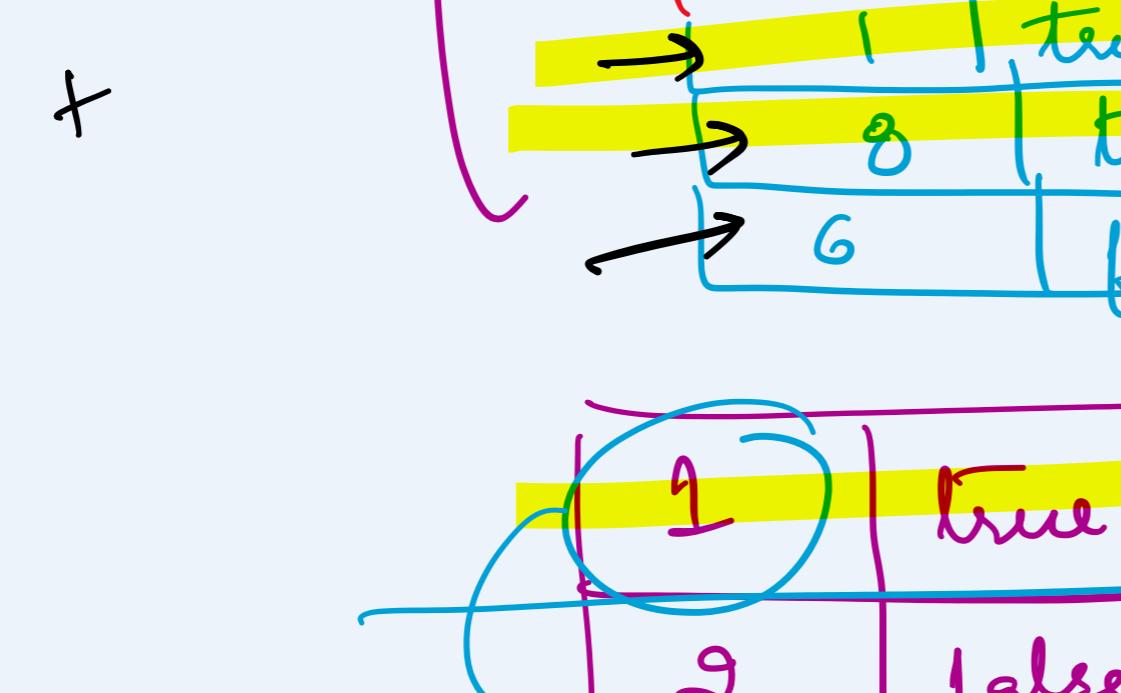
Input: nums = [1, 2, 3] k = 3

Output : 2 [1, 2], [3]

Approach ①



Approach ②



$$cm[i] - cm[j] = k$$

sum of ele from idx i to j = k

HashMap

< Sum, no. of occurrences of sum >

$$\frac{\text{Sum}}{\text{Count}} = \frac{3+4+7+2-3+1+4+2}{8} = \frac{16-3}{8} = \frac{13}{8} = 1.625$$

$$\frac{\text{Sum} - k}{\text{Count}} = \frac{16-7}{8} = \frac{9}{8} = 1.125$$

$$\frac{13-7}{8} = \frac{6}{8} = 0.75$$

$$18-7 = 11$$

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$$2$$